# Harrison Hot Springs BioBlitz: Summary Report for Partners





#### Harrison Hot Springs "BioBlitz" Summary Report for Partners September 2011



#### Prepared for:

The South Coast Conservation Program (SCCP). Established in 2005, the SCCP is a multi-partner, landscape-level conservation program. The primary objective of the SCCP is to coordinate and facilitate the maintenance and recovery of species and ecosystems at risk in the Lower Mainland eco-region of the South Coast of British Columbia. <a href="http://www.sccp.ca/">http://www.sccp.ca/</a>



Fraser Valley Watersheds Coalition: The FVWC is a coalition of individuals, groups, and agencies working to promote healthy watersheds in the Fraser Valley by facilitating understanding and action in local communities.



#### www.fvwc.ca

Miami River Streamkeepers: The MRSk works to raise awareness and promote the conservation and restoration of the Miami River, a tributary to the Harrison River.



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F R E M F Fraser River

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## **Executive Summary**

Throughout British Columbia, public and private lands play an important role in linking and protecting critical habitat for a range of species, many of which are at risk. Collaborative actions that enhance understanding of the natural capital such areas support contributes to more effective, ecologically informed decision making. BioBlitzes or "Biodiversity Blitzes, are one of many tools for facilitating such collaborative efforts. Part contest, part festival, part educational event and scientific endeavor, the Harrison BioBlitz, a first for the Village of Harrison Hot Springs, offered a community-based approach to identifying species and ecosystem diversity for various areas of Crown and municipally zoned lands.

Two main areas in particular were targeted, the Miami River Greenway and the "East Sector Lands", a lowland forest and wetland community considered to be biodiversity hotspot<sup>1</sup> for the Harrison area. As well as providing for updated information on pre-existing inventory data and species use, this event brought together a diverse set of local stakeholder interests from land use managers to local stewards.

In all, two hundred and sixty-six (266) different species of flora and fauna, including six (6) federally and/or provincially listed species were identified from the BioBlitz. This information will contribute to provincial resources such as the BC Conservation Data Center (CDC) as well as the local and regional knowledge base. In particular, species occurrence data will inform land managers for other similar ecosystems under Crown jurisdiction such as those managed by BC Timber Sales. The results of the BioBlitz will also support the work of the South Coast Conservation Program (SCCP) by informing conservation actions around species at risk in the Fraser Valley.

The Harrison Hot Springs BioBlitz provided a valuable bridging opportunity to bring together the interests of the SCCP, Fraser Valley Watersheds Coalition, Miami River Streamkeepers, Friends of the East Sector and the Village of Harrison Hot Springs. With its successful completion, the SCCP is looking forward to seeing these respective stakeholders continue to work collaboratively on efforts to inventory and monitor species and ecosystems of conservation concern in the Harrison - Miami River watershed. Such partnerships are integral to the work of the SCCP in coordinating and facilitating the maintenance and recovery of species and ecosystems at risk for the long-term.

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<sup>&</sup>lt;sup>1</sup> BC Nature July 2010: Letter to Hon. Barry Penner, BC Minister of Environment.



"A BioBlitz is designed to increase the public's awareness of the variety of life in their immediate neighborhood and the services these various species provide to improve the quality of their lives.

What better way to address the topic than to invite people to share in our 24-hours of discovery and to experience the vast array of species that we can find in their neighborhood park in just one cycle of the day?"

Source: Center for Conservation and Biodiversity and Connecticut State Museum of Natural History

#### Introduction

What exactly is a "BioBlitz"? The term was first coined by National Park Service naturalist Susan Rudy while assisting with the first BioBlitz at Kenilworth Aquatic Gardens, Washington D.C. in 1996. A BioBlitz has the dual aims of establishing the degree of biodiversity in an area while connecting local citizens, community groups and land use managers with concepts of conservation science. Often local parks are chosen for BioBlitz events as they have many of the key partnerships or stakeholders in place to facilitate the event.

Specialists in various disciplines like botany, entomology and ornithology all play a role. Some BioBlitzes become an annual event, such as the one which has been occurring since 2006 in the Resort Municipality of Whistler<sup>2</sup>. Scientists establish a base at a point close to the area to be blitzed and provide expertise in identifying species found by the public as well as doing their own inspection of the area.

Ideally, a BioBlitz takes place over a full 24-hour period as different organisms are likely to be found at different times (e.g bats, insects etc.). While only daytime blitzes over shorter periods are equally popular, the results may less accurately show the variety of life in the area. Regardless, BioBlitzes are an innovative way to link aspects of social and natural capital through re-establishing people's sense of wonder at exploring and being part of the natural world.

<sup>&</sup>lt;sup>2</sup> http://www.whistlerBioBlitz.ca/

# Why a South Coast BioBlitz?

The South Coast of BC, made up of three provincial Forest Districts is home to some of the highest levels of biodiversity and species at risk in BC<sup>3</sup>.

This incredible natural capital is under a number of existing and potential threats including:

- Habitat loss
- Displacement and predaton by introduced species
- Habitat degradation

The causes are numerous; human population growth, invasive species and climate change are just a few of the sources of biodiversity loss. The more we learn about this valuable natural capital, through efforts like BoBlitzes, the more we can do to protect and sustain it now and in the future.

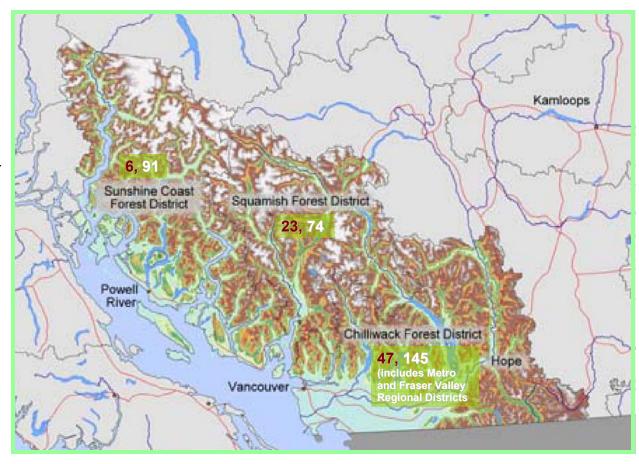


Figure 1. Number of species federally listed at risk (red) and provincially classified as threatened/endangered (white) on the South Coast by forest district (shaded area). Map Source: Imap BC.

<sup>&</sup>lt;sup>3</sup> Rich Wildlife, Poor Protection: The urgent need for strong legal protection of British Columbia's biodiversity. David Suzuki Foundation 2007.



BioBlitz events have become popular throughout Canada and the US, supported by organizations like Robert Bateman's "Get to Know Program", Parks Canada and a number of universities, local governments and environmental non-government organizations.

On BC's South Coast, BioBlitzes have becoming annual events or are proposed for the following locations:

- Resort Municipality of Whistler
- Iris Griffith Field Studies & Interpretive Center (Sunshine Coast)
- Burnaby Lake Regional Park
- UBC Botanical Garden (Vancouver)
- Stanley Park

#### South Coast BioBlitz Goals:

- Provide opportunities to improve skill sets in the identification of local species of conservation concern.
- Encourage BioBlitz team participants to consider similar survey activities at other potential biodiversity hotspots on the South Coast to add to the regional knowledge base.
- Report out and inform elected officials and land use managers of the biodiversity values present in their local areas.

#### South Coast BioBlitz Objectives:

- Increase the capacity of local land use authorities as frontline "managers" to identify species at risk occurring within their areas of management.
- Engage municipal interests, local stewards and the broader public in "citizen science<sup>4</sup>" efforts to enhance conservation actions for species at risk.
- Ensure information and adequate tools are available to maintain species and ecosystem diversity from the local to eco-regional landscape.

<sup>&</sup>lt;sup>4</sup> "Citizen science is a term used for projects or ongoing program of scientific work in which individual volunteers or networks of volunteers, many of whom may have no specific scientific training, perform or manage research-related tasks such as observation, measurement, or computation." Source: Wikipedia.

#### Fraser Lowlands Regional Context

The Fraser Lowlands of BC's South Coast is home to some of the highest numbers of species at risk. Adjacent to Metro Vancouver, the Fraser Valley Regional District in particular supports the only known Garry Oak communities on the mainland of BC. A number of other species of conservation concern found at the northernmost part of their North American range occur there. Efforts have been evolving to develop management priorities for habitat and species conservation in regional parks and protected areas in the Fraser Valley<sup>5</sup>. Integrating biodiversity into the decision making process is a critical step to understanding the role priority areas play across the regional landscape for conserving species and ecosystems at risk.

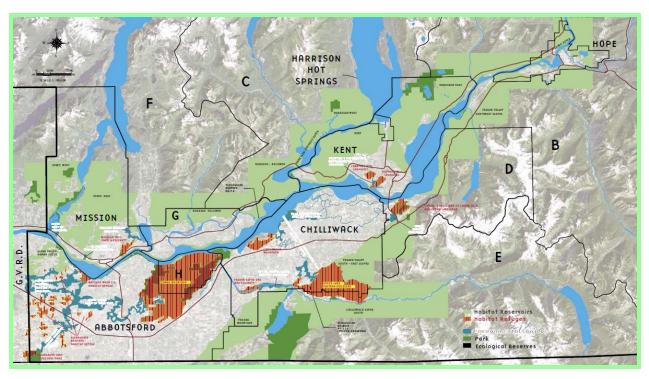


Figure 2. Habitat reservoirs and refuges in the Fraser Lowlands (Fraser Valley Regional District). Source FVRD Regional Growth Strategy 2004.

<sup>&</sup>lt;sup>5</sup> Choices for our Future Regional Growth Strategy for the Fraser Valley Regional District 2004

## **Harrison Hot Springs**

Since the SCCP partnered with the FVRD and Chilliwack Field Naturalists to deliver a BioBlitz at Cheam Lake Regional Park in 2008, discussions have been underway to consider the feasibility of a similar event for the Village of Harrison Hot Springs.

The Village of Harrison Hot Springs is a small community in the FVRD on the northern boundary of the District of Kent, at the confluence of the Miami River and Harrison Lake. The Village boosts a number of locally significant natural assets found on public and private lands including the Miami River headwaters and floodplain, the east side of Mount Agassiz, the west side of Bear Mountain and a relatively intact lowland forest and wetland complex know as the "East Sector Lands".

A great deal of inventory work has been undertaken for species and ecosystems at risk on the south side of the Fraser River (e.g. Sumas, Chilliwack and Cheam areas). However less information is known about the extent to which many listed species of flora and fauna may be distributed in similar habitats to the north, in areas such as the Harrison and Miami River Floodplains. (See Appendix 1 for detailed land use information for the BioBlitz area)



Figure 3. Harrison Hot Springs and surrounding area. Source: Google Earth



To compliment the Harrison Hot Springs BioBlitz, various events (bat mist netting, aquatic surveys of the Miami River) were scheduled to engage the public while gathering further inventory data.

Educational displays and interpretive natural history walks were provided during the second day of the event as a concurrent method to connect local residents and visitors to the natural values of the area as well as the activities and efforts of the BioBlitz partners.

Image: Rachel Drennan.

## Conducting the BioBlitz

While the SCCP has a focus on species at risk, attempting an overall biodiversity "reading" through conducting a BioBlitz is a complimentary goal. Participants are asked not only to confirm species such as native and invasive plants using a supplied checklist but look beyond the easily identifiable. Less charismatic species such as mollusks, amphibians and reptiles as well as rare plant and animal associations all reflect the unique values present in and around the Village of Harrison Hot Springs.

In some BioBlitzes, specialists and experts are just 'let loose' to inventory as much area as they can cover in the time allowed. With the Harrison Hot Springs however the number of generalists and laypersons participating significantly out-numbered individuals with specialized skills or inventory expertise. To accommodate this "Blitz Teams" were created and each team was assigned various segments of the Village. This was to ensure a somewhat comparable level of coverage for various areas throughout the BioBlitz as well as an opportunity for mentoring. Each team had a team leader who had either familiarity with the ecological values of the site or had sufficient expertise in overseeing a field 'expedition' and assisting with species identification.





Harrison Hot Springs BioBlitz teams (left the "East Sector" team, right the Miami Greenway team).

## **Findings**

Baseline information is a value added component to undertaking any BioBlitz. The Harrison Hot Springs BioBlitz was a means to update fairly antiquated inventory data (i.e. the last major inventory for the area, on the East Sector lands, was 1998). It also served to compile locally documented 'naturalists' observations. Provincially and federally listed species confirmed through the BioBlitz are priorities for conservation management and outreach for the SCCP.

In all a total of two hundred and sixty-six (266) species of flora and fauna were identified, including one provincially Redlisted and five Blue-listed species, of which four were federally listed (see Appendix 2 for detailed breakdown of species, listings and definitions).

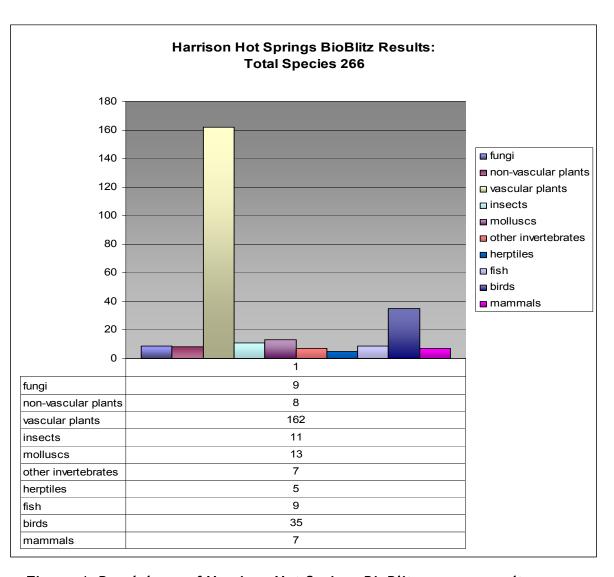


Figure 4. Breakdown of Harrison Hot Springs BioBlitz survey results.

The results of the Harrison Hot Springs BioBlitz indicate that the Village and its surrounding lands support a range of species and ecosystems. Those like the East Sector Lands offer a rich mosaic of habitat types and associated species use. The Miami River Greenway, more impacted by human disturbance still provides for a number of native plant and animal species. As with many other settlement areas in the region, invasive plant species as well as introduced fauna like arion slugs and Green Frog proliferate throughout the Village regardless of relative disturbance.

With this information in hand, local stewards and land use authorities can now pool the data from the BioBlitz, historic inventory information (e.g. "BIOLOGICAL INVENTORY OF EAST SECTOR SPECIAL PLANNING AREA", Knopp and Roy 1998) and information that may be made available through local environmental assessments of private lands to create a species baseline for the area.

Future BioBlitzes can then use this digital 'checklist' as a benchmark for observations, data compilation and reporting. BioBlitz participants should be urged to take photo records of their findings, especially for plants and small fauna like mollusks, invertebrates and herptiles to assist in species verification and building an adequate baseline for the area.



The South Coast Bat Action Team was just one of a number of conservation and environmental education partners that participated in the Harrison BioBlitz. Along with other participants they concluded:

"I was happy to have had the opportunity to participate, would certainly love to come out again!"

"The BioBlitz provided me with improved identification skills to use at other sites.

"It was a great experience to work with others and helped me to streamline the survey procedures I use."

Image: South Coast Bat Acton Team display at the Harrison Hot Springs. BioBlitz. Source: Rachel Drennan.

#### The Harrison BioBlitz in Review

The contributions and perspectives of participants are integral to improving and refining future iterations of any large-scale public event. For Harrison Hot Springs this was an inaugural event. Depending on whether participants had been to a BioBlitz before often contributed to their perspectives. It is important to recognize though that regardless of an individual's previous experiences, each BioBlitz is unique and has to be customized to the mosaic of the participants as well as the site conditions and partner capacity.

All in all, participants reported a very positive and worthwhile experience, but felt that some aspects of the event could have been planned better. Comments included:

- Groups may have functioned better if they had been smaller and individuals could focus on particular areas (e.g. plants versus wildlife). With the team structure more time was spent in some areas than in others (e.g. looking for birds), rather than time for plant identification. As well some of the younger team members might also be better teamed up with a wildlife oriented team.
- Individuals should have collected their own data rather than reporting to a note-taker for the team. This would have freed up time for exploration for team members who had to wait for others to report back before moving to another area.
- It would have been great to receive better coverage in the media and have someone come out during the BioBlitz and provide some coverage to increase the awareness in the local communities.

Location also played a factor in attendance of the interpretive displays and interactive outreach component. The Friday evening participants' social event and displays on the Harrison Lake waterfront (Rendall Park) provided a venue for direct advertising with residents and tourists for that evening's bat mist netting and owl walk events happening to the south on the Miami River Greenway (Spring Park). Both were well attended. However the following day the events were concentrated only at Spring Park. While providing a great setting along the Miami River, this park was not a heavy traffic area

used by visitors. Though the event was advertised in local online media weeks in advance, actual signage for the event was only posted in key areas a couple of days before. Coupled with the arts festival happening on the Village waterfront that same weekend and poor weather (something beyond anyone's control), the Spring Park venue did not have the necessary draw to allow for heavy interaction with local residents or visitors. These are all things to consider should local interests wish to have an encore event of this type.

#### **Next Steps**

The SCCP works to facilitate public engagement and citizen science opportunities around species and ecosystems at risk with local partners. This is done with the intent to provide those partners with tools and ideas as to how best to take further conservation actions. Should the partners in the BioBlitz wish to have BioBlitzes become a regular event in the area, there are a number of learning outcomes to consider:

- 1. Make future BioBlitzes a fully collaboratively supported event locally and regionally: By late 2011/early 2012, the Miami River Streamkeepers, Friends of the East Sector, Village of Harrison Hot Springs, Fraser Valley Watersheds Coalition, Fraser Valley Regional District and other potential partners (e.g. industry and business interests) should meet to assess their interest in collaborating on future BioBlitzes in the Village.
- 2. **Set project scope and resources needed:** Partners need to identify the extent and scope of a future BioBlitz and the social capital (people resources) and finances needed to support planning and implementation. This includes securing sufficient specialist expertise (quantity as well as quality) to cover off gaps in knowledge at the local level, as well as providing for wider coverage geographically. In respect to event location, moving the event to the Harrison Lake foreshore (i.e. along the waterfront of the Village) either as part of a complimentary event or stand alone will likely enhance exposure and public engagement values.
- 3. **Timing and setting deliverables:** Regardless of the certainty of funding, partners should undertake planning for the event at least six (6) months in advance. This will allow for more effective planning and notification of the event and advertising to specialists and experts who often have field season schedules planned well in advance. It will also allow for adequate time to build the event and market and disseminate information locally and regionally.

The Harrison Hot Springs BioBlitz should be considered successful by all involved. Given the Village of Harrison Hot Spring's wonderful natural assets, and with sufficient planning and partnership building, there is no reason why it cannot continue to part of the many BioBlitz events growing in popularity on the South Coast of BC!

## Appendix 1. Approximate areas surveyed for the Harrison Hot Springs BioBlitz

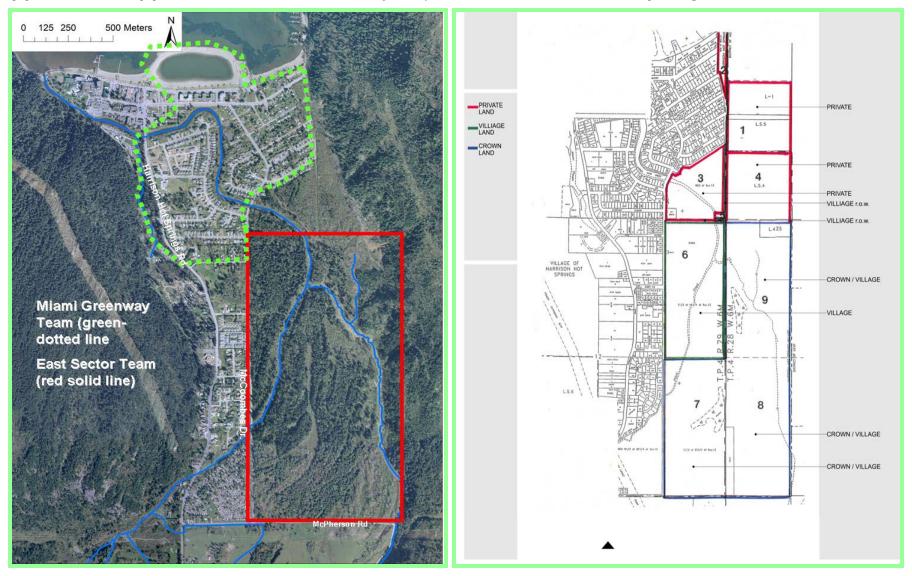


Figure 5. Areas surveyed by respective BioBlitz teams and associated land tenure for the East Sector

## Appendix 2. Detailed BioBlitz survey results and associated species information<sup>6</sup>

Table 1. Vascular and non vascular plants

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes	BC listing
Non-vascular plants (mosses		rotrophs)				
"coastal leafy moss"	Plagiomnium insigne	Х				yellow
"Douglas' neckera"	Neckera douglasii	X				yellow
"tree-ruffle liverwort"	Porella navicularis	Х				
awned haircap moss	Polytrichum piliferum		x			
flat moss sp.	Plagiothecium undula Buckiella undulata	tum or	X			
Indian pipe	Monotropa uniflora	Х				
rock moss sp.	Racomitrium sp.		Х			
step moss	Hylocomium splendens		Х			yellow
Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes	BC listing
Vascular Plants						
American speedwell	Veronica beccabunga var. americana	х				yellow
annual fleabane	Erigeron annuus		х			
avens sp.	Geumsp.		х			
awl-fruited sedge	Carex stipata var. stipata					yellow
baneberry	Actaea rubra					yellow
beaked hazelnut	Corylus cornata var. californica	х	х			yellow
bigleaf maple	Acer macrophylium	Х	х			yellow

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<sup>&</sup>lt;sup>6</sup> Wherever possible photo documentation was used to verify species identification, especially where questions arose. However a number of participants did not provide images to accompany their findings.

bitter dock	Rumex obtusifolius	х	х			yellow
black cottonwood	Populus trichocarpe	Х	Х			yellow
black gooseberry	Ribes lacustre					yellow
black hawthorn	Cratageus douglasii (li var.suksdorfii)	ikely	х			yellow
black raspberry	Rubus leucodermis	х	x			yellow
black twinberry	Lonicera involucrata	Х	x			yellow
black walnut	Juglans nigra	x			(*Juglans ailanthifoli Japanese w exotic	
bracken fern likely lanuginosum ssp.	Pteridium aquilinum	Х	х			yellow
broad-leaved plantain	Plantago major	Х	Х			exotic
broad-leaved starflower	Trientalis borealis ssp. latifolia	х				yellow
bull thistle	Cirsium vulgare					exotic
Canada thistle	Cirsium arvense		Х			exotic
cascara	Rhamnus purshiana	Х	Х			yellow
cattail (likely common cattail)	Typha latifolia		Х			yellow
cherry (likely pin, choke or bitter cherry)	Prunus sp.		х			yellow
chickweed sp.	sp. In family Caryophyllaceae		х			exotic
chicory	Cichorium intybus		Х			exotic
cinquefoil sp.	sp. In family Rosaceae			х	p#9915	yellow or exotic
clasping twisted stalk	Streptopus amplexifolius var. amplexifolius	Х				yellow
Coast Douglas-fir	Pseudotsuga menziesii var. menziesii	Х	х			yellow
coast penstemon	Penstemon serrulatus		х		p#12:11	yellow
Columbia brome	Bromus vulgaris	Х				yellow
common burdock	Arctium minus	Х	х			exotic

common dandelion	Taraxacum officinale	Х	Х	yellow
common duckweed	Lemna minor	Х	x	yellow
common evening primrose	Oenothera biennis		Х	exotic
common horsetail	Equisetum arvense		x	yellow
common periwinkle	Vinca minor		Х	exotic
common St. John's wort	Hypericum	Х	Х	exotic
	perforatum			
common tansy	Tanacetum vulgare		Х	exotic
creeping buttercup	Ranunculus repens	Х	Х	exotic
cutleaf evergreen blackberry	Rubus laciniatus		Х	exotic
cut-leaf geranium	Geranium dissectum		Х	
deer fern	Blechnum spicant	Х		yellow
Daisy sp.	Erigeron sp.		x	exotic
devil's club	Oplopanax horridus	Х		yellow
dull Oregon grape	Mahonia nervosa	Х	Х	yellow
enchanter's nightshade (likely	Circaea alpina ssp.	Х	Х	yellow
pacifica ssp.)	Pacifica			
English holly	Ilex aquifolium	Х		exotic
English oak	Quercus robur	Х		exotic
European bittersweet	Solanum dulcamara vo	ır.	Х	exotic
	dulcamara	1		
European mountain ash	Sorbus aucuparia		X	exotic
evening primrose	Oenothera biennis		X	exotic
false azalea ssp.	Menziesia ferruginea	Х		yellow
	ssp.			
false lily-of-the-valley	Maianthrmum dilatatum		x	yellow
false Solomon's seal ssp. (likely amplexicaule ssp.)	Maianthemum racemo	sum ssp.	х	yellow
field bindweed	Convulvus arvensis		Х	exotic
fireweed	Epilobium angustifolium ssp.	х	х	yellow
	circumvagum			
floating-leaved pondweed	Potamogeton natans	Х	Х	yellow
foxglove	Digitalus purpurea			exotic
goatsbeard	Aruncus dioicus	Х	Х	yellow
goldernrod sp. (likely "Canada	Solidago sp.		Х	exotic
goldenrod sp.)				

common groundsel	Senecio vugaris		Х		exotic
hardhack	Spiraea douglasii ssp. douglasii	х	Х		yellow
Hawthorn sp.	Cratageus sp. Likely C laevigata	•			
hemlock water-parsnip	Sium suave	Х	Х		yellow
hemp-nettle	Galeopsis tetrahit	Х			exotic
herb-Robert	Geranium robertianum	Х	Х		exotic
Himalayan blackberry	Rubus armeniacus	Х	Х		exotic
Hooker's fairybells	Prosartes hookeri	Х	Х		yellow
hop clover	Trifolium sp.	Х			exotic
Indian plum	Oemleria cerasiformis		Х		yellow
Japanese knotweed	Fallopia japonica	Х	x	East Sector: 10.589076. 5459364	exotic
kinnikinnik	Arctostaphylos uva- ursi		x		yellow
kneeling angelica	Angelica genuflexa		Х	p#9830	yellow
lady fern	Athyrium filix- femina ssp. cyclosorum	Х	х		yellow
lady's-thumb	Persicaria maculosa		Х		exotic
large-leaved avens	Geum macrophyllum ssp. macrophyllum	х	х		yellow
licorice fern	Polypodium glycyrrhiza	х	Х		yellow
marsh speedwell	Veronica scutellata	х			yellow
meadow buttercup	Ranunculus acris	х	Х		exotic
Mexican hedge-nettle	Stachys mexicana		Х	10.588888. 546090	yellow
mock orange	Philadelphus lewisii		Х		yellow
mountain sweet-Cicely	Osmorhiza berteroi				yellow
great mullein	Verbascum thapsus		х		yellow
narrow-leaved bur-reed	Sparganium angustifolium		Х		yellow

nipplewort	Lapsan communis	х	х			exotic
nodding beggar-ticks	Bidens cernua					yellow
Nootka rose	Rosa nutkana var. nutkana		х			yellow
northern maidenhair	Adiantum aleuticum		Х			yellow
ocean spray	holodiscus discolor	Х	Х	Х		yellow
orchard grass	Dactylis glomerata					exotic
oxeye daisy	Leucanthemum vulgare		X			
Pacific bleeding heart	Dicentra formosa	Х	Х			yellow
Pacific crabapple	Malus fusca	Х				yellow
Pacific ninebark			Х			yellow
Pacific water-parsley	Oenanthe sarmentosa	x	х			yellow
Pacific willow	Salix lasiandra	Х	Х			yellow
paper birch	Betula papyrifera var.	x	х			yellow
pearly everlasting	Anaphalis margaritacea	х	х			yellow
Philadelphia flea bane	Erigeron philadelphicus		х		p#12:05	yellow
phlox ?			Х			yellow
piggy-back plant	Tolmiea menzeiessi	х	х			Yello w
policeman's helmet	Impatiens glandulifera		х			exotic
prickly sow thistle	Sonchus asper		Х			exotic
purple loosestrife	Lythrum salicaria	Х				exotic
purple-leaved willowherb ssp.	Epilobium ciliatum ssp.	x	X			yellow
Ranunculus sp.	Ranunculus sp.		Х			
rattlesnake plantain	Goodyera oblongfolia	Х				yellow
red alder	Alnus rubra	Х	х			yellow
red clover	Trifolium pratense	Х	х			exotic
red elderberry (likely coastal	Sambucus racemosa	Х	х			yellow
ssp. arborescens)	ssp. arborescens					
red huckleberry	Vaccinium parvifolium					yellow

red-flowering currant	Ribes sanguineum var. sanguineum		Х		yellow
red-osier dogwood	Cornus stoloinfera	Х			yellow
reed canarygrass	Phalaris arundinacea				yellow
ribwort plantain	Plantago lanceolata		Х		exotic
Rocky Mountain pond-lily	Nuphar polysepala	Х	Х		yellow
salmonberry	Rubus spectabilis	Х	Х		yellow
Scotch broom	Cytisus scoparius		Х	along McCoombs Rd.	exotic
Scouler's willow	Salix scouleriana		Х		yellow
self-heal ssp.	Prunella vulgaris ssp. vulgaris or lanceolata	Х	х		exotic /yello w
sheep sorrel	Rumex acetosella		Х		exotic
shepherd's purse	Capsella bursa- pastoris		х		exotic
shore pine	Pinus contorta var. contorta	х			yellow
Siberian miners lettuce	Claytonia sibirica	Х	Х		yellow
Sitka mountian ash	Sorbus sitchensis	Х	Х		yellow
Sitka sedge	Carex sitchenis		Х		yellow
Sitka willow	Salix sitchensis		Х		yellow
Sitka spruce	Picea sitchensis	Х	Х		yellow
skunk cabbage	Lysichitum americanum	Х	x		yellow
slough sedge	Carex obnupta	х			yellow
small touch-me-not	Impatiens parviflora		Х		exotic
smooth hawksbeard	Crepis capillaris				exotic
snowberry	Symphoicarpos albus	х	Х		yellow
Sow thistle sp. 1	Sonchus sp.		Х		
Sow thistle sp. 2	Sonchus sp.		Х		
spiny wood fern	Dryopteris expansa				yellow
starwort sp.	Callitriche or Stellaria spp or ssp.	х			blue, yellow & exotic

stinging nettle	Utrica dioica	х	Х			exotic
swamp horsetail	Equisetum fluviatile	Х	Х			yellow
sweet ("dames") rocket	Hesperis matronalis	Х	х			exotic
sweet-scented bedstraw	Galium triflorum	Х				yellow
sword fern	Polystichum munitum	Х	x			yellow
tall mannagrass	Glyceria elata	Х				yellow
tansy ragwort	Senecio jacobaea		х			exotic
thimbleberry	Rubus parviflorus var. parviflorus	х	х			yellow
three-leaved foamflower	Tiarella trifoliata var. trifoliata	х	х			yellow
thyme-leaved speedwell var. (likely var .serpyllifolia)	Veronica serpyllifolia var.		х			exotic
tiger lily	Lilium columbianum					yellow
trailing blackberry	Rubus ursinus ssp. macropetalus	х	x			yellow
trembling aspen	Populus tremuloides	Х	Х			yellow
tufted clubrush	Trichophorum cespitosum					yellow
tufted vetch	Vicia cracca ssp. cracca		х			yellow
upright yellow oxalis	Oxalis stricta					yellow
vine maple	Acer circinatum	Х	х			yellow
wall lettuce	Lactuca muralis	Х	х			exotic
waterweed sp. (likely canadensis)	Elodea sp.		x	x	p#9872 may be Nuttall's waterweed)	yellow or blue respec tively
western hemlock	Tsuga heterophylla	Х	x			yellow
western red cedar	Thuja plicata	х	Х			yellow
western trilium	Trillium ovatum var. ovatum	Х				yellow
white clover	Trifolium repens	Х				exotic
white cockle	Silene latifolia ssp. alba		х			exotic
wikd oat sp	Avena sp.		Х			

willow sp.	Salix sp.	Х			
yarrow	Achillea millefolium		Х	p#11:32	yellow
	var. ?				
yellow archangel	Lamium galeobdolon	Х			exotic
Yellow iris	Iris pseudoacorus		Х		exotic

## Table 2. Fungi

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes
puffball mushroom	Lycoperdaceae family	·	Х	•	
tree fungus sp. (e.g. conk, polypore or turkey tail)		x	Х		p#9931 10.588749.5461224+- 4m
dye polypore	Phaeolus schweinitzii	Х			
elegant polypore	Polyporus elegans	Х			
lichen agaric	Omphalina ericetorum	Х			
miniature waxy-cap	Hygrocybe miniata	Х			
red-belted polypore	Fomitopsis pinicola	х			
shaggy mane	Coprinus comatus	Х			
stalked yellow trunc	Truncocolumella citrina	х			
turkey tail	Trametes versicolor	Х	х		

## Table 3. Insects

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	Notes	BC listing
8 spotted skimmer	Libellula forensis		х		immature or female, confrimed by photo	yellow
blackfly (larva)	Simulium sp.				HHS Ditch@tall grass/quarry trl footbridge	
bluet damselfly sp.	Enallagma		х	Х	p#9939 (Miami grnwy)	

common emerald	Hemithea aestivaria			Х	p#9834
diving beetle sp.	Copelatus or Agabus sp.				HHS Ditch@tall grass/quarry trl footbridge
firefly	Ellychnia sp?				p#9935, may be other genus, not typically found in this area
forktail damselfly sp	Ischnura sp.		х		
freeliving caddisfly sp.		х			HHS Ditch@tall grass/quarry trl footbridge
Midge (larva) sp.					
northern case maker caddis	sfly sp.	х			HHS Ditch@tall grass/quarry trl footbridge
water strider	Gerris sp.	Х			
watersnipe fly (larvae)	Atherix lantha				HHS Ditch@tall grass/quarry trl footbridge
western tiger swallowtail	Papilo rutulus		х		yellow

#### Table 4. Molluscs

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes	BC listing
beaded lancetooth	Ancotrema sportella	х	х			yellow
chocolate arion	Arion rufus	Х	х			exotic
conical spot	Punctum randolphi					yellow
dusky arion	Arion subfuscus					exotic
freshwater ("pond") snail sp. (Physid snail)	Stagnicola sp. (?)				HHS Ditch@tall grass/quarry trl footbridge	yellow
giant garden slug	Limax maximus		х			exotic
northwest hesperian	Vespericola columbianus	х				yellow

Oregon lancetooth	Ancotrema hybridum	х	Х			yellow
Pacific bananaslug	Ariolimax columbianus	х				yellow
Pacific sideband	Monadenia fidelis	х	X		10.0588320.5461173, 589252.5460575, 589258.5460415, 5895274.5461245, 589274.5461245, 589232.5460768	blue
snail sp.			Х		p#9908	
western flat-whorl	Planogyra clappi	х				yellow
winged or Oregon floater (mussel sp.)	Anadonta sp.			х		yellow

#### Table 5. Other invertebrates

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes	BC listing
aquatic worm sp.		х				
crayfish	Pacifastacus leniusculus		Х			yellow
leech sp.		х	x		HHS Ditch@tall gra footbridge	ss/quarry trl
scud (freshwater shrimp)	Gammarus sp.		x		HHS Ditch@tall gra footbridge	ss/quarry trl
water mite sp.		х			HHS Ditch@tall gra footbridge	ss/quarry trl
woodlouse	Armadillidium sp.	х				
yellow-spotted millipede	Harpaphe haydeniana	Х	Х			

Table 6. Herptiles (reptiles & amphibians)

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	notes	Provincial listing	Federal listing
Comon gartersnake	Thamnophis sirtalis	х				yellow	
Green Frog	Lithobates clamitans	Х	х			yellow	exotic
Long-toed salamander	Ambystoma macrodactylum	Х			10.589244.5 440653	yellow	NAR
Northern Alligator Lizard	Gerrtionotus coeruleus	Х	х			yellow	NAR
Northern Red- legged Frog	Rana aurora	х	Х			blue	SC

Table 7. Fish

Species Common Name	Scientific name	Village & Miami Greenways	BC listing	COSEWIC (Federal) listing
Coho	Oncorhynchus kisutch	х	yellow	
Chinook	Oncorhynchus tshawytscha	х	yellow	
Cutthroat troat (clarkii ssp.)	Oncorhynchus clarkii clarkii	х	blue	
Northern Pikeminnow	Ptychochilus oregonensis	х	yellow	
Pumpkinseed	Lepomis gibbosus	х	exotic	
Redside Shiner	Richardsonius balteatus	х	yellow	
Salish Sucker	Catostomus sp.	х	red	е

Threespine Stickleback	Gasteroseus aculeatus	х	yellow	
Largescale sucker	Catostomus macrocheilus	х	yellow	
*fish sampling restricted t area	o Miami River Greenway			

## Table 8. Birds

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	BC listing	COSEWIC (Federal) listing
American Goldfinch	Spinus tristis			Х	yellow	
American Robin	Turdus migratorius		Х		yellow	
Barn Swallow	Hirundo rustica		Х		blue	t
Black-capped Chickadee	Parus atricapillus		Х		yellow	
Black-headed Grosbeak	Pheucticus melanocephalus				yellow	
Brewer's Backbird	Euphagus cyanocephalus			Х	yellow	
Brown-Headed Cowbird	Molothrus ater			Х	yellow	
Canada goose	Branta canadensis		Х		yellow	
Cassin's Vireo	Vireo cassinii	Х			yellow	
Cedar Waxwing	Bombycilla gamilus	Х	Х		yellow	
Chestnut-backed Chickadee	Parus rufescens		Х		yellow	
Common Raven	Corvus corax	Х	Х	Х	yellow	
Golden-crowned Kinglet	Regulus satrapa	х	Х		yellow	
Great Blue Heron fannini ssp.	Ardea herodias fannini		Х		blue	SC
House Finch	Carpodacus mexicanus		Х		yellow	
House Sparrow	Passers domesticus		Х	Х	exotic	
Killdeer	Charadrius vociferus		Х		yellow	
Mallard	Anas platyrhynchos		Х	Х	yellow	
Northwestern Crow	Corvus caurinus		Х	Х	yellow	
Pacific Wren	Troglodytes pacificus		Х		yellow	

Pacific-slope Flycatcher	Empidonax difficilis		х		yellow
Pileated Woodpecker	Dryocopus pileatus		Х		yellow
Red-eyed Vireo	Vireo olivaceus		Х		yellow
Red-winged Blackbird	Agelaius phoeniceus		Х		yellow
Ruby-crowned Kinglet	Regulus calendula		Х		yellow
Rufous Hummingbird	Selasphoms rufus		Х		yellow
Rufous-sided Towhee	Pipilo erythropthalmus		Х		yellow
Semipalmated Sandpiper	Calidris pusilla			Х	
Song Sparrow	Melospiza melodia		Х	х	yellow
Steller's Jay	Cyanocitta stelleri		Х		yellow
Swainson's Thrush	Catharus guttatus	Х	х		yellow
Tree Swallow	Tachycineta bicolor		Х		yellow
Violet-green Swallow	Tachycineta thalassina		Х		yellow
White-Crowned Sparrow	Zonotrichia leucophrys		х		yellow
Yellow-Rumped Warbler (Audobon)	Dendroica coronata		Х		yellow

## Table 9. Mammals

Species Common Name	Scientific name	East Sector	Village & Miami Greenways	Harrison Lake & Foreshore	BC listing	COSEWIC (Federal) listing
American Beaver	Castor canadensis		Х		yellow	
Black Bear	Ursus americanus				yellow	NAR
Coast Mole	Scapanus orarius	Х	Х		yellow	
Deermouse sp. (Northwestern or North American sp.)	Peromyscus keeni or P. maniculatus	Х			yellow	
Little Brown Myotis	Myotis lucifugus		Х		yellow	
Roof Rat	Rattus rattus		Х		exotic	
Striped Skunk	Mephitis mephitis		х		yellow	

Table 10. Flora and Fauna observed during the pre-blitz reconnaissance, June 27 2011

Species Common N	ame	Scientif	ic name	East Sector	Miami	Harrison Lake & Foreshore	notes	Provincial listing
maidenhair spleenw	ort	Aspleniu trichom trichom	anes ssp.	x			one of several @ hibernacula top of NE talus slope - below Bear Mntn. 10.589376.5461474 +-10m	yellow
mint or bergamot sp	).	Mentha Monardo	•	X			large patch north portion of Crown component, lowland btwn Bridal and Beaver Pond trls. need second opinion on photo	exotic or yellow
moss sp.				Х			" "	
parsley fern		Cryptog acrostic		X			" " *may be Cascade parsley fern - need second opinion on photo	yellow or blue respectively
Species Common Name	Scientific	name	East Sector	notes		Provincial listing	Federal listing	
Northwestern Gartersnake	Thamnop ordinoide		х	top of NE ta	ral @ hibernacula alus slope - below 10.589376.5461474	yellow	NAR	

## Appendix 3. Signage, outreach, and marketing for the Harrison Hot Springs BioBlitz



Figure 6. BioBlitz marketing flyer and Fraser Valley Watershed's Coalition newsletter article (page 1/2)





Figure 7. BioBlitz poster and event schedule for day one and two



Figure 8. Post BioBlitz article in Harrison-Agassiz Observer

#### Website information:

http://fvwc.ca/index.php/comm unity-events/details/38-bioblitzharrison-hot-springs.

http://www.gettoknow.ca/event s/bioblitz/locations/ down on the right to British Columbia).